

Introduction to Course: Advanced Topics in Machine Learning

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Advanced Topics in Machine Learning – course information

- Course code: INFR11286/INFR11289. Shorthand: ATML Webpage
 - Webpage <https://opencourse.inf.ed.ac.uk/atml>
- Lecture tracks and locations:
 - **Mondays 17:10 – 18:00: Track 1: Optimization and Neural networks**
 - Lecturer: Rik Sarkar
 - Location: Lecture Theatre B, 40 George Square
 - **Tuesdays 17:10 – 18:00: Track 2: Deep generative modeling**
 - Lecturer: Nikolay Malkin
 - Location: Room 425 – Anatomy Lecture Theatre, Doorway 3 - Medical School, Teviot
 - **Thursdays 17:10 – 18:00: Track 3: Geometric Learning**
 - Lecturer: Viacheslav Borovitskiy
 - Location: Lecture Theatre B, 40 George Square

Course structure

- Three independent tracks – Three independent *mini* courses
- Final exam will have one question for each track
 - You have to answer any two
- For now, you should follow all three tracks and decide a little later which ones to prepare for exam
 - Get a broader exposure to advanced ML
- Evaluation: 100% exam (exam in April/may session)

Tutorial structure

- Tutorials run week 3 to week 10.
 - You will be given exercises, questions (tutorial questions, lecture notes etc)
- Three tutorial slots each week
 - Each slot will be attended by different lecturers and TAs.
 - You can come to any slots depending on what you want to discuss that week.
- Tutorial schedule to be published later

Course materials

- No single book
 - Specific parts of books may be suggested for certain topics
- References, Notes, exercises, papers, slides provided as we go
 - Per track
- Sample exam questions will be provided
- Piazza forum active (linked from LEARN and webpage)

Requirement

- You should have previous experience with machine learning
- E.g. Informatics courses such as AML, MLG, PMR, MLP or similar courses elsewhere
 - This course is about deeper aspects of ML, assuming you know basic ML
- Mathematics: mathematical notations and some analysis
 - You will need to learn some new mathematical ideas as the course runs
- Programming and practical ML not strictly required (no programming in exam)
 - But there can be some suggested exercises that involve running/modifying small programs for exploration of ideas.

Who the course is for

- Students who want to be experts in ML and datascience
- Students who want to develop or modify model/algorithms/ideas
- Student who want to do research (PhD, research in industry etc)
 - Research in ML
 - Research in other areas, that requires ML

What we hope to do in the course

- Some new techniques and methods
- Main focus: Give you some idea of the various issues, techniques and ways of thinking in advanced ML.
- After the course, you will have better understanding to learn more when you need
 - To keep up with the field
 - Innovate your own models and methods